IRISH FISHERY INVESTIGATIONS.[1]

THESE two volumes form the third and fourth reports upon the scientific investigations into fishery questions, which have been conducted for the Irish department responsible for the fisheries by Mr. E. W. L. Holt, the scientific adviser. They fully maintain the high standard set by their two predecessors both in the nature of their contents and in the manner in which they are printed and illustrated.

It is a matter for congratulation that the Irish Government has adopted so comprehensive and intelligent a view of the manner in which such investigations should be planned and carried out, and it is to be hoped that any narrow and uninstructed criticism, such as Mr. Holt appears to suggest has been made upon the work, may not be allowed to interfere in any way with its progress. "In my last report," says Mr. Holt in the volume for 1904, "I endeavoured to make it clear that the papers in the appendix, even if couched in unavoidably technical language, did actually contain information essential to the possibility of success in attack on practical fishery questions. The endeavour seems to have failed to some extent, but perhaps in the course of time it may be more generally surmised that if a due understanding of the minutiæ of habit and environment is of some use in agriculture, so may it also be in the direction of piscatorial enterprise, and that because an animal has an unfamiliar name it does not necessarily follow that it is of no importance."

The kind of criticism of which Mr. Holt here appears to complain would seem to be similar to that to which the work carried out by Prof. Herdman in the Irish Sea has recently been subjected. At a meeting last year of the Lancashire and Western Sea Fisheries Committee, a member of the committee, the Rev. J. E. Green, is reported by the *Liverpool Daily Post and Mercury* to have said "he thought they ought to manage to cut down the expense of the annual report. The printing came to about 70*l.* a year, and there was a quantity of verbiage in it which was not easily understood. For instance, they had a long list of Latin names which he had taken the trouble to try and translate, with the assistance of the latest work of Lewis and Short, but he had failed to do so. If the names were to be inserted, the translations should also be put by the side, for they were absolutely useless unless the Lancashire fishermen happened to be graduates of the Liverpool University."

The picture of the diligent committeeman seeking a translation of the specific names used by naturalists "in the latest work of Lewis and Short" has its humorous side. We fear his method might even be somewhat misleading in the case of such a simple specific name as *Homo sapiens*. Both Mr. Holt and Prof. Herdman must, however, take comfort from the fact that the difficulty of making the general public, or those who happen to occupy positions of authority, realise the importance of technical biological studies is one which most scientific investigators have to face, and for some unexplained reason is met with in a particularly aggravated form in the case of fishery work.

Mr. Holt's report for 1904 is followed by six, and that for 1905 by seven, appendices dealing with marine work, whilst in each case one appendix is devoted to inland fisheries. Of the former, one only deals directly with fishes, that by Holt and Byrne on the fishes of the Irish Atlantic Slope. This paper contains sixteen additions to the list of the fish fauna of the British-and-Irish area, which have resulted from the operations of the fishery steamer *Helga*.

The Crustacea, a group which is of such great importance from the point of view of the food of fishes, receive considerable attention. Dr. W. T. Calman records forty-eight species of Cumacea from the west coast of Ireland, of which nine are new to science. The latter are carefully described, and the details of their external characters are illustrated in eighty-six well-executed figures.

Mr. Tattersall treats in a similar way the Isopoda and pelagic Amphipoda from the same region, ten new species of Isopoda and four new species of Amphipoda being described and figured. Mr. Tattersall and Mr. Holt add a supplement to their former report on the Schizopoda, and Mr. Stanley Kemp contributes a useful review of the Decapod genus Acanthephyra. Miss Delap's notes on the rearing in an aquarium of *Aurelia aurita* and *Pelagia perla* are also of great interest.

The most important sections in the appendices on inland fisheries are Mr. Holt's reports on the artificial propagation of the Salmonidæ and Mr. Hillas's record of salmon-marking experiments.

The two volumes make it clear that a very large amount of most useful work is being carried out, the value of which will increase at a very rapid rate as the data accumulate from year to year.

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[1] "Report on the Sea and Inland Fisheries of Ireland for 1904." Part ii. Scientific Investigations. Department of Agriculture and Technical Instruction for Ireland. Ditto for 1905. (Dublin: Published for H.M. Stationery Office by A. Thom and Co., Ltd., 1906 and 1907.) Price 4*s.* 4*d* and 2*s.* 1*d.*

NOTES.

IN the House of Commons on Monday, Mr. Mallet asked the Secretary of State for War whether he was aware of the public service rendered by a commission of the Royal Society, at the request of the War Office and the Admiralty, in discovering the cause of Malta fever, from which many hundreds annually of our soldiers and sailors on that island until recently suffered; and whether, in view of the importance of this discovery in the annals of preventive medicine, inasmuch as at the present moment the disease had been entirely stamped out, he would consider the desirability of giving the thanks of the Government to the Royal Society for this instance of the successful application of British scientific research? In his reply to this question Mr. Haldane said:—"I am aware of the great service rendered by the commission in question. The commission's investigations and the adoption of preventive measures as the outcome of its recommendations have been followed by the practical disappearance of Malta fever from the garrison of the island. I think that the Royal Society is well aware how genuine is the appreciation of the Government. We owe much to the Royal Society's commission for the successful issue of this remarkable investigation, and for the excellent results which have followed. These results illustrate the enormous importance of bringing science into our business of government."

WE announce with great regret that Lieutenant-General Sir Richard Strachey, G.C.S.I., F.R.S., died on February 12 at ninety-one years of age.

THE following have been elected honorary and foreign members of the Chemical Society:—A. E. J. Gautier, Paris; A. Haller, Paris; J. W. Hittorf, Münster; J. A. Le Bel, Paris; H. L. Le Chatelier, Paris; T. W. Richards, Cambridge, Mass., U.S.A.; and O. Wallach, Göttingen.

THE Paris Academy of Sciences has, says the *Revue Scientifique*, in cooperation with the Minister of Public Instruction, undertaken, at the invitation of Sir Norman

Lockyer, K.C.B., F.R.S., to form a committee of French men of science to assist in securing an important place for science in the forthcoming Franco-British Exhibition.

IT is stated in the *Pioneer Mail* that special subcommittees have been appointed by the Board of Scientific Advice for India to consider and report on proposals which have been submitted for the re-organisation of the Botanical Survey Department and the future organisation of the Economic Products Department.

WE learn from *Science* that Prof. W. Stratford, for forty-one years a member of the teaching staff of the New York City College, died on January 24. Prof. Stratford was a well-known member of the scientific organisations of New York, and was a recognised expert in biological microscopy. In his work in the City College he introduced laboratory methods and developed its museum, enriching it with the fruits of several palæontological excursions to the Rockies.

A ROYAL Commission has been appointed to consider, among other matters, the materials or the processes used in the manufacture or preparation of whisky and other kinds of potable spirits manufactured in or imported into the United Kingdom. The chairman of the commission is Lord James of Hereford, and the members are:—Mr. L. M. Guillemard, C.B., Dr. W. E. Adeney, Dr. J. R. Bradford, F.R.S., Dr. H. T. Brown, F.R.S., Dr. G. S. Buchanan, Mr. J. Y. Buchanan, F.R.S., and Dr. A. R. Cushny, F.R.S. The secretary to the commission is Mr. A. V. Symonds, of the Local Government Board. The appointment of this commission arises out of the difficulties described in an article on "What is Whisky?" which appeared in NATURE of March 8, 1906 (vol. lxxiii., p. 441).

AT a meeting of copper and brass manufacturers, engineers and others, held in Manchester on February 13 (Mr. W. H. Johnson in the chair), it was unanimously resolved to form a Copper and Brass Institute having similar objects to those of the Iron and Steel Institute. It is not the intention of the founders to limit the institute to the copper and brass trades, but to include all those connected with the commercially important non-ferrous metals and their alloys, as lead, zinc, tin, aluminium, nickel, silver, gold, platinum, &c., and their alloys. A further meeting will be held in the Midland Hotel, Manchester, on Tuesday, March 10, at 4 p.m., to which all those interested are most cordially invited. Prof. H. C. H. Carpenter, professor of metallurgy, The University, Manchester, will receive the names of any persons who propose to attend or are interested in the formation of the institute.

THE meteorological observatory on Ben Nevis was again the subject of a question in the House of Commons on Monday, when the Chancellor of the Exchequer was asked whether he could hold out any prospect of a grant towards its upkeep. In the course of his reply, Mr. Asquith said that the only scheme which has up to the present been placed before him is one under which the whole cost of the re-equipment and maintenance of the observatories would be thrown upon public funds, and to this he does not feel justified in assenting. He is, however, quite prepared to consider the question of renewing the Government grant, which was for many years given to the Ben Nevis observatories through the Meteorological Council, provided that an adequate contribution towards their re-establishment and maintenance is forthcoming from other sources.

AT a meeting held in the Transvaal Museum, Pretoria, on January 13, it was resolved to form an association, to be called "The Transvaal Biological Society," with the object of promoting the discussion of scientific problems by biological investigation, to arrange for regular meetings for this purpose, and to publish the proceedings of the meetings. All persons are eligible for membership who are actually engaged in biological investigations and have published at least one scientific paper, or are working on such. Every member is expected to furnish at least one paper each year. The committee for the current year consists of Dr. Theiler, C.M.G., president; Mr. Burtt-Davy, vice-president; and Dr. L. H. Gough, secretary and treasurer. The new society will fill a long-felt want in Pretoria.

PROF. G. K. GILBERT, in his recent report to the United States Geological Survey, stated that the conditions of flow and erosion at Niagara Falls would soon cease to be natural, owing to the large amount of water diverted for industrial purposes. The correspondent of the *Times* at Washington, as we note in that journal for February 14, gives an abstract of the views of Dr. Spencer, of the Canadian Survey, which are far more specific and alarming. Dr. Spencer, it appears, looks forward to the practical disappearance of the American falls, through the utilisation of water-rights already conceded; and the correspondent suggests that Congress would be favourable to the incorporation of an agreement for the regulation of the waters of the Niagara River in the general treaty respecting questions pending between the United States and Great Britain.

IT was suggested by Mr. R. Pohl in a paper read before the German Physical Society in June last that the formation of gas bubbles in the glass of vacuum tubes, described by Mr. A. A. Campbell Swinton in a paper before the Royal Society (see NATURE, April 4, 1907, p. 550), is due to a metallic film caused by disintegration of the internal aluminium electrodes, and that if the aluminium be first completely etched away, then no bubbles are formed in the glass when it is subsequently heated. Mr. Swinton writes, however, to say that these conclusions are disproved by some further experiments recently carried out by him, in which a plentiful supply of bubbles was easily obtained in the glass of tubes which had been excited over prolonged periods by electrostatic induction from outside, and in which there were no aluminium or other internal electrodes to disintegrate and cause the metallic film to which Mr. Pohl attributes the effect.

SEVERAL interesting speeches were made at a dinner of the Physical Society held on February 11 at the Hotel Cecil, when the chair was taken by the president, Prof. J. Perry, F.R.S., and a number of distinguished guests and fellows of the society were present. In the course of some remarks, Sir William Ramsay dwelt on the relations of physics and chemistry. He pointed out that one of the chief difficulties of the chemist at the present time is the solution of the mathematical problems involved in chemistry, and there is a great opening for "tame mathematicians" who will hold themselves at the disposal of the chemist. In response to the president, Prof. E. B. Rosa, of the National Bureau of Standards, Washington, stated that he had been greatly interested in visiting the National Physical Laboratory, and observing the progress that had been made since his last visit five years ago. At the National Bureau of Standards satisfactory headway is being made, and it is hoped that the laboratory will shortly be equal to any national laboratory in the world. In the United States much money is being spent on the science of agriculture, because agriculture is a national asset. Prof. Rosa suggested that England similarly would find it a profitable investment to devote the money spent in constructing one battleship per annum to the National Physical Laboratory instead of preparing for war. In responding to the toast of "The Physical Society," the president dwelt on the importance of research. At the present day there are many science teachers and many compilers of books who do no research. They are well up in the letter of science, but not in the spirit thereof, with the result that their writings lack a most essential quality which can be gained only by actual research. He appealed to the leaders of physical science to attend the meetings of the society, not for their own benefit, but from a sense of duty, for there is nothing so inspiriting to the younger members as contact with men who have carried out important work.

From Mr. F. L. Dames, of Berlin, we have received a catalogue of books and papers on entomological subjects (No. 96, *Bibliotheca Entomologica*).

No. 7 of Irish Fisheries Scientific Investigations for 1906 (1907) contains a report on artificial salmon and trout breeding for the season 1906–7, from which it appears that the total for salmon comes within about 500,000 of that of the previous season, and therefore is by about that number in excess of any previous year.

Two papers on regeneration are included in vol. lxxxix., part i., of the *Zeitschrift für wissenschaftliche Zoologie*. In the first of these Mr. J. Nusbaum describes the processes occurring in one of the polychæte worms of the genus Nereis, while in the second Mr. J. Grochmalicki discusses the regeneration of the lens of the eye in bony fishes. In the case of one particular fish from which this organ had been extirpated, a new lens, differing slightly in form from the original, was developed in 187 days.

In the course of an article on hermaphroditism in echinoderms, published in Nos. 6 and 7 of the *Travaux de la Société Impériale des Naturalistes de St. Pétersbourg* for 1907, the author, Mr. G. Gadd, argues that since this phenomenon is not uncommon in sea-cucumbers, more rare in star-fishes, and almost unknown in sea-urchins, we have a confirmation of the view that it is an attribute of the less highly organised members of the groups in which it occurs.

To the *Museums Journal* for January Dr. H. C. Sorby contributes a paper on the best means of preserving marine invertebrates for museum purposes in such a manner that their natural colouring will be retained. As regards his own private collection, the author finds anhydrous glycerin —covered, when necessary, with a layer of almond oil— the most satisfactory medium, some specimens which have been preserved in this manner for fully five years displaying their tints with even more than normal brilliancy. The chief difficulty in the case of museum specimens would be in the use of large rectangular vessels, owing to danger of leakage.

The *Lyttelton Times* (New Zealand) of December 3, 1907, contains a long summary of the results of the recent scientific expedition to Auckland, Campbell, and other islands lying to the southward of New Zealand. Mr. Speight, geologist to the expedition, claims to have discovered in Auckland, Campbell, Snares, and Disappointment (not apparently the island of the same name in the Low Archipelago, but one somewhere near the others) rocks indicating that these islands once formed a part of the Antarctic continent. The islands have also been extensively glaciated. Of insects, flies and tipulæ are the most numerous, but beetles and dragon-flies were also observed. A linnet-like bird from Campbell Island has not yet been identified; and successful photographs have been obtained of the skua, shag, mollymawk, gull, albatross, and penguin rookeries. On Snares Island the stench from the birds and seals is stated to have been almost intolerable, and the members of the expedition who visited the Campbell group suffered severely from the colds and wind.

A special paragraph in the issue quoted above is devoted to Disappointment Island, which was visited by Dr. L. Cockayne, who devoted special attention to the vegetation. Although the number of species is small, the vegetation as a whole is comparatively luxuriant. Very striking is the large *Aciphylla latifolia*, a member of the carrot tribe, while the male flowers of the orange lily, *Bulbinella rossi*, are conspicuous "The most interesting feature of all is the natural rejuvenation of the vegetation that is going on. Cast your eye over the landscape, and you will see brown meadow dotted with white birds, which slowly but surely kill out all the plant-covering, and patches of vivid green. This latter arises from the presence of the Antarctic burr, or piri-piri, in enormous quantities; and it, a quite rare plant in a virgin meadow, has spread from thence and occupied the new ground, thanks to its colonising power, its spiky fruits adhering to the feathers of the young birds and so being spread broadcast. Here there is a splendid example of a plant of little importance becoming virtually a weed in a virgin vegetation. But finally tussock will resume the sway, and a gradual destruction and rejuvenation of the vegetation must go on, thanks to the mollymawks."

In the February number of *British Birds* the editors discuss certain allegations against the black-headed gull which formed the subject of notice in the previous issue. Without entering into the controversy, we may notice that the allegations have induced two county councils in Scotland to strike gulls of all kinds out of the protected list. In another paragraph the editors refer to the subject of "luminous owls." In their opinion, the luminosity is most probably to be attributed to phosphorescent bacteria derived from decaying wood. It may, however, be due either to a phosphorescent feather-fungus (akin to one known to occur in geese) or to a diseased condition of the oil-gland, whereby the oil is more abundant than usual, and so abnormal in its nature as to become luminous on exposure to the air. Whatever be the true explanation, it is evident that the phenomenon is abnormal, and almost certainly due to the presence of foreign matter on the feathers.

The reports on the botanic and experiment stations and agricultural education in St. Kitts-Nevis for 1906–7, besides reviewing the work for the year, summarise the progress made since the institution of the Imperial Department of Agriculture for the West Indies. The sugar industry has benefited by the introduction of the seedling canes B. 147 and B. 208; cotton cultivation has been developed since 1901, when trial plots were started, until an area of 5000 acres is now planted in the three islands St. Kitts, Nevis, and Anguilla. The cultivation of cacao proceeds more slowly, but gives promise of success. Rubber planting, chiefly with *Castilloa elastica*, is also receiving attention. The records of the experiment plots provide useful data with regard to growing tobacco, varieties of potatoes, cassava, yams, sweet potatoes, and other minor products.

ACTING upon the advice of Prof. H. J. Hamburger, it was decided to publish in the *Recueil de l'Institut botanique de Bruxelles* (vol. vii.) the course of lectures on molecular physiology delivered by the late Prof. Errera to students taking the botanical degree in the University. It is primarily a physicochemical course dealing with the properties of fluids and solids, and the special application of the laws regulating their action to various botanical problems. Surface tension of liquids, viscosity, properties of emulsions, circulation of gases and liquids in narrow tubes, and similar phenomena are treated with regard to their bearing in plants, and especially with reference to the two important subjects of osmosis and the ascent of sap in trees. Practical examples of calculations in connection with osmotic problems are given, and the discussion of the various theories put forward to explain the ascent of sap is illustrative of Prof. Errera's lucid exposition.

THE *West Indian Bulletin* (No. 3, vol. viii.) contains summaries of several of the papers presented to the famous agricultural conference of 1907. Mr. Gossett points out how valuable Indian cattle have proved in Jamaica; they are said to surpass all others as workers, and to be so remarkably hardy in constitution that they withstand the effects of the climate, of insects, and other pests, besides being able to subsist on coarse grasses and shrubs that other cattle would refuse. Another paper deals with the suitability of Jamaica for breeding horses, mules, and polo ponies. Mr. Cox discusses the prospects of tea production, and concludes that tea is a safe crop for a settler who lives within reach of a factory. Mr. Cousins contributes two papers, one on cassava starch and the other on agricultural education in Jamaica. He finds that cassava starch of high quality and commanding a good price can be produced in Jamaica at a cost which allows a very handsome profit. Other papers deal with Jamaica ginger and with the native timbers. The standard of the papers is very good, and all the authors are very hopeful about the future. They have good reason, for few of our possessions have better agricultural departments than the West Indies.

THE second number of the Bulletin of the Imperial Central Agricultural Experiment Station of Japan is to hand, and is in every way an excellent production. One paper deals with the behaviour of nitrate of soda in paddy soils. Nagaoka found some years ago that this fertiliser actually depressed the yields of rice, Sagittaria, and *Juncus effusus* when cultivated, as is usual in Japan, on swampy soils. He considered that the effect was due to denitrification, a process which would give rise, among other things, to poisonous nitrites. It is now shown that this view is correct. Another paper, by Uchiyama, deals with the influence of stimulating compounds such as manganese and iron salts, sodium fluoride and potassium iodide on crops, a subject to which considerable attention has been devoted in Japan. The general conclusion is that manganese sulphate at the rate of 20 kilos. to 50 kilos. per hectare increases the crop, but the actual amount of the increase depends on a variety of factors. The most favourable ratio of lime to magnesia in soils forms the subject of several papers. There is also an important synoptical list of Coccidæ of Japan, with descriptions of thirteen new species by Kuwana. The bulletin is profusely illustrated, and the illustrations are unusually good.

THE report of the chief of the U.S. Weather Bureau for the fiscal year ended June 30, 1906, has just reached us. In the department dealing with weather prediction, the distinctive work of the year was the study of atmospheric movements in the United States with the additional light afforded by reports from the Azores, western Europe, Honolulu, and other places, the result of which has been sufficiently encouraging to warrant a still further extension of area. The amazing figures connected with the receipt of telegraphic reports and the distribution of meteorological information were referred to in NATURE, vol. lxxvi., p. 300. There has been considerable increase of observing stations of various classes; the number now amounts to more than 4500. The report contains, *inter alia*, observations or summaries for a large number of selected places, and monthly and annual rainfall values for all stations, for the year 1905, the whole occupying 405 quarto pages. At Mount Weather Research Observatory systematic work is carried on in connection with the international kite experiments; the institution possesses a very complete instrumental outfit for the purpose. Among various other useful operations of the bureau, we may mention that efforts are being made to correlate and reduce to a uniform system the teaching of meteorology in the numerous colleges and schools; circular letters on the subject have apparently been addressed to a large number of educational establishments.

AN important paper on the smoke from metallurgical works, by Mr. W. D. Harkins and Mr. R. E. Swain, is contained in the Journal of the American Chemical Society (vol. xxix., No. 4). The work which led to the publication of the paper was the estimation of the amount of arsenic expelled from the greatest of the world's smelting works, a plant which has a capacity of 10,000 tons of ore per day, and a production estimated at 11½ per cent. of the world's output of copper. It has been found that not only are the trees and grass in the vicinity of works injured by the sulphur dioxide and sulphuric acid of the smoke, but the grass is also rendered poisonous by arsenic. By the erection of new works with huge settling chambers in place of the long flues of the old works, the loss of animals in the valley became very much greater than before. The velocity determinations and analyses of smoke set forth in the paper were undertaken with a view to determine the real efficiency of the great flues and stack, 300 feet high, built in order to prevent damage to the forests and crops. The velocity determinations were made with a Pitot tube, modified by Captain D. W. Taylor, which was found to give much more trustworthy results than the wheel anemometer. The results of the investigation show that while the great flue may be fairly efficient in causing the copper from the smoke to settle, a considerable amount escapes, while the amount of arsenic given off is very great. The arsenic is chiefly in the form of trioxide, but a small amount exists in the form of trisulphide and in the form of complex minerals containing iron. The dust from the flue near the stack or in the stack itself contains a considerable amount of concentrated sulphuric acid, while that from near the furnaces contains much less. To this sulphuric acid, together with the arsenic with which it is associated, is probably due much of the spotting of leaves which is so common in the vicinity of the works. The action of the flue dust is of far less importance than that of the sulphur dioxide in affecting the growth of plants, but the arsenic of the dust may affect to a greater degree the value of the grasses, since it renders them poisonous.

MESSRS. C. WOOLLISCROFT AND SON, LTD., Hanley, Staffs, ask for information as to an electrostatic separator for the purpose of extracting iron pyrites. An expert to whom we referred the inquiry has been good enough to reply that the latest type of electrostatic separator is the Blake-Morscher, which was described in a paper read before the Institution of Mining and Metallurgy by E. A. Weinberg (Transactions, 1905, vol. xiv., p. 169). It is of American manufacture, and can probably be obtained from Fraser and Chalmers, of Erith. Earlier forms are exhaustively described in a paper read by H. C. McNeill before the Iron and Steel Institute (Journal, 1899, vol. lvi., p. 18). Machinery for the extraction of iron pyrites is made by the German "Humboldt Company," of Kalk, near Cologne.

THE *Verhandlungen der deutschen physikalischen Gesellschaft* for December, 1907, contains a communication from Prof. E. Wiedemann, in which he directs attention to two Arabic books of the thirteenth and fourteenth centuries, in the former of which the method of magnetising a steel needle by rubbing it on a natural lodestone is described, while in the latter instructions are given for mounting a needle so magnetised within a wooden fish, which when placed on water heads always to the north. This appears to be the first known mention of the compass, although the matter is treated as if it were common knowledge at the time.

VOL. iv. of "Contributions from the Jefferson Physical Laboratory of Harvard University" contains thirteen memoirs, five of which are from the pen of Prof. B. O. Peirce. Most of these memoirs are reprinted from vol. xlii. of the Proceedings of the American Academy of Arts and Sciences, 1906. There is one, on architectural acoustics, by Prof. W. C. Sabine, reprinted from the *American Architect* for 1900, which well deserves close attention from architects in this country. It is a thoroughly scientific attack on the problem of determining the acoustical properties of a room before it is built. The author describes his measurements of the absorbing powers of walls, screens, furniture, and audience, and shows how the constants thus determined can be used in calculating the amount of reverberation to be expected in a large number of cases. In each case direct measurement confirmed the result of the calculation.

THE report for 1908 of the International Committee on Atomic Weights is printed in No. 335 of the Proceedings of the Chemical Society. From the data here given, and from those cited in previous reports, it is concluded that the entire table of atomic weights is in need of revision. The values assigned to potassium and sodium are too high; those given to chlorine and sulphur are too low, and these constants affect the determination of many others. They depend, however, on the atomic weight of silver, which is probably, but not certainly, as low as 107·88. It is well known that work upon these fundamental constants is now nearing completion in several laboratories, and within a few months it should be possible to enter upon a satisfactory revision of the table, a task which would be unsatisfactory if undertaken now. It is true that the present table contains inconsistencies, but they are small in amount, and are due to inconsistencies in the original data from which the values are derived. Since issuing the last report Prof. Moissan has died, and has been succeeded on the committee by M. G. Urbain. The report being drawn up in November last does not deal with the striking result obtained by W. Marckwald in the case of tellurium, which has been published since; this element has long held an abnormal position in the periodic arrangement owing to its appearing to have an atomic weight greater than that of iodine. According to Marckwald, its correct atomic weight is 126·85, that is, 0·12 unit less than the atomic weight of iodine, so that it now falls into line with the rest of the elements.

A SECOND edition of Mr. Arthur Whiting's "Retouching" has been published by Messrs. Dawbarn and Ward, Ltd.

A SECOND edition of the useful "Handbook to the Vivaria and Fresh-water Aquaria" at the Horniman Museum, Forest Hill, S.E., has been issued by the London County Council. Copies may be obtained through a bookseller, or directly from Messrs. P. S. King and Son, of Westminster; the price of the catalogue is one penny.

MESSRS. CROSBY LOCKWOOD AND SON have published a fifth edition of Dr. Bernard Dyer's "Fertilisers and Feeding Stuffs: their Properties and Uses," which contains also the full text of the Fertilisers and Feeding Stuffs Act, 1906, the regulations and forms of the Board of Agriculture, and notes on the Act by Mr. A. J. David. The new edition has been revised, and its price is 1*s*. net.

OUR ASTRONOMICAL COLUMN.

THE RECENT SPECTRUM AND MAGNITUDE OF NOVA PERSEI NO. 2.—The results of Prof. Hartmann's more recent investigations of the spectrum of Nova Persei No. 2 (1901) appear in No. 4232 of the *Astronomische Nachrichten* (p. 113, February 8). Finding that when the magnitude of the star became less than 10·0 he was unable to photograph the spectrum with the large instrument used in the previous investigation, Prof. Hartmann devised a new spectroscope in which the collimator objective, of 40 mm. aperture and 60 cm. focal length, was made of U.V. glass, and the camera objective was made of quartz, having an aperture of 40 mm. and a focal length of 32 cm.; quartz prisms were employed, and the distance between Hβ and Hδ on the plate was 4·6 mm. This spectrograph was used in conjunction with the 80-cm. refractor, and a good spectrum was obtained with 8¼ hours' exposure on October 15 and 18, 1907, when the Nova's magnitude was 11·4. The main feature of this spectrum is its similarity to the spectrum of the Wolf-Rayet star B.D. 35°.4001. In both spectra the brightest line is at λ 4688, whilst Hβ, Hγ, and Hδ are more faintly shown. The fairly strong line in the spectrum of the W.-R. star at λ 4618 is comparatively faint in that of the Nova, whilst the trace of a line in the latter at λ 3890 is not to be found in the Wolf-Rayet spectrum. The chief nebula lines at λλ 5007 and 4959 are apparently absent from both spectra or are very faint.

Determinations of the magnitude of the Nova gave the following results:—1905, November 1, 11·2; 1906, November 24, 11·3; and 1907, October 13, 11·44.

THE HELIUM LINE, D_3, AS A DARK LINE IN THE SOLAR SPECTRUM.—In No. 393 of the *Observatory* (p. 94, February) Mr. A. A. Buss discusses the article by Father Cortie, which appeared in the January number, anent the presence of the dark, D_3, line of helium in the solar spectrum. From our previous note (No. 1995, p. 281, January 23) it will be remembered that Father Cortie discussed a photograph obtained by Mr. Nagaraja, on which both the dark and the bright line of helium, D_3, were supposed to be represented, and came to the conclusion that the identification was, possibly, a mistaken one. Mr. Buss now advances a number of arguments upholding the original view. In the first place, he points out that any arguments on this question suffer considerable uncertainty owing to different values being given for the principal lines under discussion. Thus Runge and Paschen give 5875·870 as the wave-length of the laboratory emission line, whilst in Young's revised list the wave-length of the chromospheric line is given as 5876; that the latter, compared with the laboratory line, suffers displacement towards the red is indicated by several different observations. Mr. Nagaraja's dark line lies almost exactly mid-way between the two, at λ 5875·930, therefore Mr. Buss considers that